#11 Appeal Brief OK OA 7/7/02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

TULLOCH et al

Atty. Ref.: **540-161**

Serial No. **09/437,226**

Group: **2858**

Filed: **November 10, 1999**

Examiner: **P. Patel**

For: **THERMOGRAPHIC WIRING INSPECTION**

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APPEAL BRIEF

On Appeal From Group Art Unit 2858

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TABLE OF CONTENTS

I. REAL PARTY IN INTEREST

The real party in interest in the above-identified appeal is BAE SYSTEMS plc by virtue of the Assignment from the inventors to British Aerospace Public Limited Company recorded November 1, 1999, at Reel 10393, Frame 0719, and a name change from British Aerospace Public Limited Company to BAE SYSTEMS plc recorded October 12, 2000, at Reel 11195, Frame 0065.

II. RELATED APPEALS AND INTERFERENCES

There are believed to be no related appeals or interferences with respect to the present application and appeal.

III. STATUS OF CLAIMS

Claims 1-24 stand rejected and claim 25 stands objected to in the outstanding Final Rejection. The Examiner contends that claims 1-24 are obvious under 35 USC §103 in view of the various combinations of cited prior art and claim 25 is objected to as depending from a rejected base claim, but has been otherwise indicated as allowable.

IV. STATUS OF AMENDMENTS

No further response has been submitted with respect to the Final Official Action in this application.

V. SUMMARY OF THE INVENTION

The present invention relates to a method for inspecting and testing the integrity of insulation on an insulated wire or cable.

Electrical wires or cables often are protected from short circuit by non-conductive insulation surrounding the wire or cable. While continuity along the wire can be tested easily, the integrity of the insulation cannot so easily be tested. In the past, visual checks to the external insulation of the wire or cable do not necessarily provide a good indication of its integrity. This is particularly true where a number of cables are bundled together in a wiring loom where portions of the wire may be hidden by other wires or structural members.

One known method of testing such preinstalled wires or cables is to apply a predetermined current to the wire and use an infrared detector to determine thermal energy emanating from the wire along its length. Where the insulation is intact, the thermal emissions are lower than the emissions might be for areas with insulation damage. The amount heat radiated by the wire and thus detected by the detector is proportional to the thickness of the insulator and thus partially damaged insulation in wires can be detected and monitored in use and replaced if need be.

Unfortunately, such detectors also suffer from the problem that infrared detectors operate generally on a line of sight basis. If a portion of the insulation away from the detector has been damaged, the detector may not show the damage

or at least indicate the extent of the damage that it would otherwise indicate if the defect was pointed towards the detector. It is often not possible to position detection apparatus around a wire, especially where wires or cables are fixed to run along a wall or structural member or there is little room for detection apparatus or its installation.

Appellants found that the addition of an electrolyte liquid sprayed around the wire allows leakage current to flow around the insulated wire and between damaged sites, creating a more significant heat image than would otherwise be present and thereby enabling hidden damage sites to be detected. thus, installed wiring including wiring looms and bundles can be easily checked to determine if the insulation has been compromised.

Accordingly, the present invention, which is a "method for **inspecting the integrity of insulation** of an insulated wire or cable," comprises the steps of "**passing a current through said wire or cable**," "**applying a fluid having electrolytic properties to said wire or cable**" and "**using a thermal imaging system to detect and display the intensity of heat emanating from said wire or cable**."

VI. ISSUES

Whether claims 1, 2, 4-7, 12-14 and 24 are obvious under 35 USC §103 over Elabd (U.S. Patent 4,584,523), Wood (U.S. Patent 4,473,795) and Gazdzinski (U.S. Patent 6,144,032).

Whether claim 15 is obvious under 35 USC §103 over the Elabd/Wood/ Gazdzinski combination further in view of Marquez-Lucero (U.S. Patent 5,574,377).

Whether claims 3 and 8-11 are obvious under 35 USC §103 over the Elabd/Wood/Gazdzinski combination further in view of Piety (U.S. Patent 5,637,871).

Whether claims 16-23 are patentable over the Elabd/Wood combination further in view of Singh (U.S. Patent 5,624,928)(appellants also believe that in this rejection the Examiner intended to incorporate the Gazdzinski reference as discussed in the detailed portion of the rejection but omitted in the statement of rejection).

VII. GROUPING OF CLAIMS

The rejected claims stand or fall together with the exception of claim 23 which is independently patentable as described in the argument portion of this Appeal Brief.

VIII. ARGUMENT

1. Discussion of the References

Elabd (U.S. Patent 4,584,523) teaches a method of measuring current flow in an electric power transmission line by detecting infrared radiation from the line. Elabd teaches that the current passing through a high tension power line can be measured utilizing infrared radiation from the I^2R losses in the line. As disclosed, an infrared sensitive camera monitors both a reference line having a known current flow and an accompanying power transmission line with the unknown current flow. By comparing the infrared radiation from the reference line and the active line, an estimate of the current passing through the transmission line can be made.

Elabd does not teach a wire or cable having insulation and thus is not concerned with integrity of insulation. Elabd does not disclose any method relating to inspecting the integrity of insulation on an insulated wire. Elabd contains no teaching of applying fluid to an insulated wire under test (whether or not that fluid has electrolytic properties). Elabd has nothing to do with inspecting any wire for any defect, let alone an insulated wire for the integrity of the insulation thereon.

Wood (U.S. Patent 4,473,795) teaches a system for determining the number, size and location of pinhole defects in an insulator coating on a semiconductor substrate. The Wood method provides an aqueous electrolyte

coating over the semiconductor and provides a battery powered current path between the electrolyte and the underlying substrate. A small focused light beam is scanned over the semiconductor surface, and when a pinhole in the insulative coating under test is scanned by the light beam, a current flow can be measured. Thus, Wood teaches the use of an aqueous electrolyte to aid in generating a current flow from the underlying substrate to the electrolyte through small pinholes which are scanned by a focused light beam to generate current flow in a measuring system.

Wood does not teach any structure or method for inspecting the integrity of insulation on an insulated wire or cable. It does not teach the passing of a current through the wire or cable. It does not use a thermal imaging system to detect or display heat emanating from a wire or cable. It specifically teaches that the electrolyte is used in conjunction with a small focused light beam to generate a change in current flow through pinhole defects in a substrate.

Gazdzinski (U.S. Patent 6,144,032) teaches an apparatus and method for determining the ageing of radiation degradable components such as electrical cable insulation. This is accomplished in Gazdzinski by irradiating the insulation under test with energetic fast neutrons from a neutron source. A series of gamma ray detectors measures the resulting gamma ray spectra indicating the stage or radiation degradation of the insulation. It noted that this does not disclose the any

information related to the integrity of the insulation, i.e., the existence of holes or thin areas in the insulation – only the chemical status of radiation induced degradation. Thus, Gazdzinski teaches a method for inspecting the integrity of insulation by neutron emission and its effect upon gamma ray production from the insulation under test.

Gazdzinski contains no disclosure of passing a current through the wire or cable under test, no disclosure of applying any fluid (let alone one having electrolytic properties) to the wire or cable and contains no disclosure of using a thermal imaging system to detect and display the intensity of heat emitted from the wire or cable.

Marquez-Lucero (U.S. Patent 5,574,377) teaches a device and method for the detection and localization of organic solvent leakages. An electrical conductor is enclosed in an organic solvent leakage detector cable. The conductor is comprised of a composite material formed by a solvent soluble or swellable thermoplastic matrix containing conductive particles. When a solvent leak occurs, the solvent interacts with the cable, causing it to swell or dissolve whereupon the conductive particles in the matrix lose contact with each other and cause the cable to diminish or lose its electrical conductivity. Pulses sent along the cable are reflected back from any point at which the cable conductivity changes, therefore providing an indication of where the leak has occurred.

Marquez-Lucero has nothing to do with any method for inspecting the integrity of insulation of an insulated wire or cable. It does not teach the step of passing a current through the wire or cable or the step of applying a fluid having electrolytic properties to the wire or cable. It does not teach the step of using a thermal imaging system to detect or display the intensity of heat emanating from the wire or cable.

Piety (U.S. Patent 5,637,871) teaches a portable digital infrared thermography system utilizing an infrared camera and a digital video data recorder.

Piety does not disclose any method for inspecting the integrity of insulation on an insulated wire or cable. Piety does not disclose the passage of current through a wire or cable under test. Additionally, Piety does not apply a fluid having electrolytic properties to any wire or cable, nor does it specifically teach the use of its thermal imaging system for the detection and display of the intensity of heat emanating from a wire or cable under test.

Singh (U.S. Patent 5,624,928) teaches a method of synthesizing an endonuclease inhibitor and analogs thereof. In this method, Singh discloses an aqueous saline solution, a sodium chloride solution, an ammonium chloride solution, a dripping of fluid, a spraying of fluid and a triton wetting agent. Singh has no teaching of any method for the inspection of the integrity of insulation, nor does it teach passing a current through a wire, applying a fluid having electrolytic

properties to a wire or using a thermal imaging system to detect and display the intensity of heat emanating from the wire.

2. Discussion of the Rejections

Claims 1, 2, 4-7, 12-14 and 24 stand rejected under 35 USC §103 as being unpatentable over Elabd, Wood and Gazdzinski. To the extent the Examiner's rejection is understood, he appears to believe that Elabd teaches the claimed method of inspecting the integrity of insulated wire, but admits that Elabd fails to teach "a leakage current measuring means (ammeter), a fluid having electrolytic properties and fluid is capable of conducting a leakage current." The Examiner then appears to rely on the Wood reference teaching an ammeter and, without any specific motivation, that it would be obvious to combine Elabd and Wood.

The Examiner also admits that Elabd and Wood in combination fail to teach "an inspecting the integrity of the insulation of an insulated cable." The Examiner cites the Gazdzinski reference as allegedly teaching the integrity of the insulation of cable.

Claim 15 is rejected under 35 USC §103 as unpatentable over Elabd/Wood/Gazdzinski and further in view of Marquez-Lucero. The Examiner admits that the Elabd/Wood/Gazdzinski combination fails to disclose "an Oscilloscope." The Examiner cites Marquez-Lucero for disclosing an oscilloscope

and, without any disclosed motivation, suggests that it would be obvious to combine Elabd, Wood, Gazdzinski and the Marquez-Lucero references.

Claims 3 and 8-11 stand rejected under 35 USC §103 as unpatentable over the Elabd/Wood/Gazdzinski combination further in view of Piety. The Examiner admits that the Elabd/Wood/Gazdzinski combination fails to disclose "a recording means for recording display images, a recording means is adapted to computer to store display images, a recording means is adapted to video tape to store display images, a false color scale to represent various temperatures." The Examiner is apparently of the opinion that Piety discloses the alleged missing features from the Elabd/Wood/Gazdzinski combination and, again without any specified motivation, suggests that it would be obvious to combine Piety with the Elabd/Wood/ Gazdzinski combination.

Claims 16-23 stand rejected under 35 USC §103 as being unpatentable over Elabd and Wood and further in view of Singh. The Examiner omitted a reference to Gazdzinski in the Elabd/Wood combination, and this omission is believed to have been a typographical error, in that the Examiner one line later refers to the Elabd/Wood/Gazdzinski combination. Appellants will treat this rejection as though the Examiner intended to combine Elabd, Wood and Gazdzinski in the manner applied in claim 1 and merely add the Singh reference to the combination.

The Examiner's admits that the Elabd/Wood/Gazdzinski combination fails to disclose "an aqueous saline solution, a sodium chloride, an ammonium chloride, dripping of fluid, a spraying of fluid and wetting agent." Because these individual aspects are alleged to be shown in Singh, the Examiner concludes, without any disclosure of motivation, that it would be obvious to combine each of these elements with the Elabd/Wood/Gazdzinski combination.

3. The Errors in the Final Rejection

There are four main errors in the Final Rejection and they are summarized as follows:

(a) None of the prior art references recognize the problem solved by appellants' combination of method steps;

(b) The Examiner has failed to provide any reason for combining any of the cited references;

(c) Each of the prior art references teach away from appellants' claimed method; and

(d) The Examiner fails to provide a reference in support of the "Official Notice."

(a) None of the prior art references recognize the problem solved by appellants' combination of method steps

It is noted that each of the rejections contained in the outstanding Official Action is based upon 35 USC §103, i.e. obviousness in view of cited prior art. Appellants contend that the Examiner, in combining three or more references in order to reject the claims in this case, is picking and choosing method steps from various prior art references and then, with 20/20 hindsight, combining those elements in the manner of appellants' method claims.

The Court of Appeals for the Federal Circuit with respect to such hindsight practice has stated

> "to prevent the use of hindsight based on the invention to defeat patentability of the invention, this court **requires** the examiner to show a motivation to combine the references that create the case of obviousness. In other words, **the Examiner must show reasons** that the skilled artisan, **confronted with the same problems as the inventor** and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed." (Emphasis added).*In re Rouffet*, 47 USPQ2d 1453, 1457-8 (Fed. Cir. 1998).

None of the cited references recognize or even suggest that there is a problem in terms of the inspection of the integrity of insulation for an insulated wire or cable. The Elabd patent deals only with the measurement of current in a high-tension power transmission line and there is no disclosure that such transmission lines are covered with insulation.

The Wood patent teaches a method of locating pinholes in an planar insulator coating on a semiconductor substrate. However, Wood's method for determining pinholes does not pass a current through the wire or cable and does apply an electrolyte fluid, but does not use a thermal imaging system to detect and display heat emanating from the wire or cable. Wood is simply a completely different method for locating pinholes in a substrate, and even if applied to measuring the integrity of insulation on wire, would comprise a completely different series of steps.

The Examiner suggests that Gazdzinski discloses the problem. However, Gazdzinski contains no disclosure that it inspects the integrity of an insulated wire or cable. Instead, Gazdzinski details only the degradation of the insulated wire or cable by its neutron bombardment and gamma ray scattering. Again, there is nothing in Gazdzinski which suggests that breaks or pinholes in the insulation could be monitored by the neutron bombardment method or in fact that there is any problem in terms of monitoring the integrity of insulation.

The Marquez-Lucero reference has nothing to do with the integrity of insulation of insulated wire or cable and instead is a device for monitoring a tank or other structure to disclose the existence and location of organic solvent leaks.

Piety, while teaching a thermal imaging system, has no disclosure relating to any possible application of such a system for inspecting the integrity of

insulation of an insulated wire or cable and certainly fails to disclose any sequence of steps for the purpose of inspecting insulation integrity.

Singh has nothing to do with the inspecting of insulation integrity and instead relates only to a method of synthesizing a compound having antiviral properties and analogs thereof.

Because none of the six cited references recognizes the problem of inspecting the integrity of wire insulation and only Wood deals with inspecting the integrity of insulation on a planar substrate with an entirely different method, none of the six references relate to the problem solved by the present invention.

The Examiner has simply failed to "show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed." *Id.*

The Court of Appeals for the Federal Circuit has held that "the PTO has the burden under §103 to establish a *prima facie* case of obviousness." *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Because the burden of establishing a *prima facie* case of obviousness is on the Examiner and because he has failed meet this burden, there is simply no basis for a rejection of appellants' claims 1-25, as the problem solved by appellants' method (not even mentioning the method) is not addressed in any of the six references.

(b) The Examiner has failed to provide any reason for combining any of the cited references

The Court of Appeals for the Federal Circuit also has stated that the Patent Office can satisfy its burden of proof "only by showing some objective teaching in the prior art." *In re Fine*, at 1598. This section means that the Examiner must show that appellants' method steps are taught in the prior art references. The claimed method step are not present in the prior art references.

Elabd doesn't teach insulation on the wire and therefore cannot teach any of appellants' three recited steps. Wood does not relate to an insulated wire, doesn't pass current through substrate 10, i.e. into and out of substrate 10, and instead applies a potential across between substrate 10 and the electrolytic liquid. This is not analogous to appellants' "passing" step. Moreover, Wood does not teach using a thermal imaging system. Because appellant does not believe that the substrate is the equivalent of an insulated wire or cable, even appellants' claimed applying step is not present in the Wood reference.

Gazdzinski doesn't teach any method steps of inspecting the integrity of insulation, but does teach a method for determining degradation of the insulation. However, he does this in a series of completely different steps. Marquez-Lucero has no disclosure of any method for inspecting insulated wire, passing current through the wire, applying a fluid to the wire or using a thermal imaging system. Piety teaches a thermal imaging system, but it has nothing to do with inspecting an

insulated wire, passing a current through the wire or applying a fluid having electrolytic properties to the wire. Singh teaches a method of making an endonuclease inhibitor and has nothing whatsoever to do with appellants' method or the method steps in claim 1.

None of applicants' specifically claimed method steps are disclosed in any of the six cited prior art references. As a result, the Patent Office has failed to meet its burden of showing any "objective teaching in the prior art."

Even if the Patent Office were to have met its burden of showing that there is some teaching in the prior art, it then has the additional burden of showing some motivation for combining those references. As noted above, because none of the prior art references recognize or attempt to solve the problem solved by appellants' invention, there can be no motivation. The Federal Circuit has consistently held that "teachings of references can be combined only if there is some suggestion or incentive to do so." *In re Fine*, at 1599.

Here the Examiner has provided no indication of any suggestion or motivation for one of ordinary skill in the art to combine three or more unrelated prior art references. The Examiner merely concludes without support that it would be "obvious" for one of ordinary skill in the art to combine the bits and pieces from the various references. Of course, this is a perfect example of prohibited "20/20" hindsight reasoning.

(c) Each of the prior art references teach away from appellants' claimed method

The Court of Appeals for the Federal Circuit has consistently held that it is "error to find obviousness where references 'diverge from and teach away from the invention at hand.'" *Id.* The only one of the cited prior art references that has anything to do with determining the integrity of insulation is the Wood reference, and this is directed towards a planar insulation layer on a semiconductor substrate, not on a wire (and thus does not suggest the problems presented by such wires).

Wood teaches that in order to determine where the pinhole defects are located, one doesn't put a current through the cable or wire under test, but rather applies a battery and an ammeter and one lead to the "wire" (in Wood, the substrate) and the other lead to a contact immersed in the electrolyte. In other words, the resistance between the electrolyte and the wire is measured. When a focused light beam is passed over a pinhole, the resistance between the electrolyte and the wire changes, providing an indication in the ammeter. Wood teaches an entirely different method of determining defects in the insulation.

Thus, Wood would clearly lead those of ordinary skill in the art away from appellants' inventive method. As a result, there can be no combination of references as alleged by the Examiner, because the Wood reference would lead one of ordinary skill in the art away from appellants' combination.

(d) The Examiner fails to provide a reference in support of the "Official Notice"

In a previous Official Action (Office Action mailed January 22, 2001, Paper No. 6), the Examiner stated with respect to a rejection of claims 15, 10, 24, 25 and claim 23 that he was taking "Official Notice" of various facts. In response, appellants' Amendment filed July 12, 2001 pointed out to the Examiner that, with respect to "Official Notice," the provisions of the Manual of Patent Examining Procedure (MPEP) apply. Specifically, MPEP Section 2144.03 indicates that where an applicant traverses the examiner's assertion with respect to "Official Notice," the "examiner should cite a reference in support of his or her position."

The "Official Notice" with respect to claim 15 was traversed on page 11, claims 24 and 25 were traversed on page 12 and claim 23 was traversed on page 13. Thus, the Examiner in accordance with the MPEP had an obligation to cite a reference in support of the alleged "Official Notice." Instead of citing references or withdrawing the rejection, in the outstanding Final Rejection, "Official Notice" is again relied upon with respect to the rejection of claim 23 and in spite of appellants' previous traversal, requiring the Examiner to cite a reference in support thereof, the Examiner merely copied the language of the previous rejection and has supplied no additional information. As a result, with respect to claim 23, the Examiner has failed to support his rejection and therefore the rejection must fall under the provisions of MPEP Section 2144.03.

IX. CONCLUSION

The present rejection is based upon the combination of three or more references which allegedly render obvious the claimed invention. In following the Federal Circuit guidelines, one must first look to whether there is any recognition of the problem in the cited prior art. As discussed in detail above, there is no recognition of the problem of inspecting the integrity of insulation on a wire in any of the cited prior art references. Further, in order to combine references, there must be some suggestion or motivation for such combination. In the present case, none of the references contain any suggestion for combining them with other references. Certainly there is no suggestion for combining three or more references in the manner of appellants' claimed method. In fact, a detailed review of the references illustrates that even the closest reference, Wood, specifically teaches away from appellants' claimed method, even if Wood is construed to be a method for determining defects in an insulation layer. Finally, with respect to claim 23, the Examiner failed to provide any support for the previously traversed "Official Notice" based rejection.

Thus, and in view of the above, the rejection of claims 1-25 over the cited prior art combinations is clearly a hindsight combination and is in error and reversal thereof by this Honorable Board is respectfully requested.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____

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SCS:kmm
Enclosures
Appendix A - Claims on Appeal

7. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 2 wherein said infra-red detector is capable of detecting temperature changes of less than 0.5°C.

8. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 3 wherein said recording means is adapted to allow displayed images to be stored on computer disks.

9. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 3 wherein said recording means is adapted to allow images to be stored on video tape.

10. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 3 wherein said images are displayed as calibrated spacial thermal images.

11. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 3 wherein a false colour scale is used to represent various temperatures on displayed images.

12. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 1 wherein said fluid is capable of conducting a leakage current.

13. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 12 wherein leakage current measuring means are provided to measure said leakage current.

14. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 13, wherein said leakage current measuring means comprises an ammeter.

15. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 13, whereas said leakage current measuring means comprises an oscilloscope.

16. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 1 wherein said fluid is an aqueous saline solution.

17. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 1 wherein said fluid comprises sodium chloride in the range 1 to 3% by mass.

18. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 1 wherein said fluid comprises 2% sodium chloride by mass.

19. A method of inspecting the integrity of the insulation of a wire or cable as claimed in claims 1 wherein said fluid comprises ammonium chloride in the range 1 to 3% by mass.

20. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 1 wherein said fluid is dripped on to the wire or cable.

21. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 1 wherein said fluid is sprayed on to the wire or cable.

22. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 1 wherein said fluid includes a wetting agent, said wetting agent being capable of reducing the surface tension of the fluid and thereby preventing large droplets from forming.

23. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 1 wherein said fluid is non-corrosive and is of a type that causes no substantial degradation of elastomeric polymer insulation around any wires or cables to which it is applied.

24. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 1 wherein said thermal imaging system is used to detect and display the intensity of heat emanating from the wire or cable prior to the application of said fluid, to provide datum values of heat emission.

25. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 24 wherein the amount of fluid used is dependent upon said datum values.

APPENDIX A

Claims on Appeal

1. A method for inspecting the integrity of insulation of an insulated wire or cable including the steps of;

passing a current through said wire or cable,

applying a fluid having electrolytic properties to said wire or cable, and

using a thermal imaging system to detect and display the intensity of heat emanating from said wire or cable.

2. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 1 wherein the thermal imaging system comprises an infra-red detector and a display monitor.

3. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 1 wherein recording means are provided for recording images displayed by the thermal imaging system.

4. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 2 wherein the infra-red detector is a thermal imaging camera.

5. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 2 wherein the infra-red detector is hand held.

6. A method for inspecting the integrity of the insulation of a wire or cable as claimed in claim 2 wherein the infra-red detector is stand mounted.